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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,549	09/22/2003	Shuji Akiya	KAW-305- USAP	6162
28892	7590	11/19/2004	EXAMINER	
SNIDER & ASSOCIATES P. O. BOX 27613 WASHINGTON, DC 20038-7613			SEVER, ANDREW T	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/665,549	<b>Applicant(s)</b> AKIYA, SHUJI	
	<b>Examiner</b> Andrew T Sever	<b>Art Unit</b> 2851	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 6 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/19/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed 12/19/2003 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

The JP 2001-209024 has been considered and marked accordingly.

### ***Specification***

2. The disclosure is objected to because of the following informalities: The index of refraction of BK7 on table 2 appears to be wrong.

Appropriate correction is required.

It is listed as 2.213 where as the index of BK7 is listed as 1.515 on applicant's other tables.

Further 2.213 is far from the generally accepted value.

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (US 5,786,937.)

Chu teaches in figure 4c, 3 dichroic prism for color decomposition, the dichroic prism being mounted with a reflection type liquid crystal projector for making a luminous flux from a light source obliquely incident on a reflection type liquid crystal display device, the prism transmitting a green color light component there through and reflecting blue and red color light components into directions different from each other upstream of the reflection type liquid crystal display device.

Chu further teaches in columns 3 and 4 table 1 that the cross dichroic prism comprises a blue-reflecting dichroic film for reflecting the blue light component and a red-reflecting dichroic film for reflecting the red light component, each of the blue- and red-reflecting dichroic films comprising lower and higher refractive index materials alternately laminated on a prism base;

The cross dichroic prism satisfying the following conditional expressions (1) or (2):

$$1.105 \leq N_h / N_l \leq 1.450 \text{ if } N_g \leq N_l \quad (1), \text{ or}$$

$$1.118 \leq N_h / N_l \leq 1.150 \text{ if } N_g > N_l \quad (2)$$

where  $N_g$  is the refractive index of the prism base,  $N_h$  is the refractive index of the higher refractive index material, and  $N_l$  is the refractive index of the lower refractive index material.

(Chu teaches that base is made of BK7 and the layers are made of  $Al_2O_3$  and  $ZrO_2$  which have index of refractions as provided by the applicant in table 1 of applicant's specification page 22: 1.646 and 1.967 respectively with BK7 having an index of 1.515 (see table 3 of applicant's tables.) This meets expression 1.

The dichroic prism of Chu's preferred embodiments is not an X prism as the dichroic prism of figure 2 is, rather Chu uses a different design which according to column 1 lines 15-29 is cheaper to fabricate, requiring less steps. However the dichroic films would be the same and accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to make Chu's dichroic prism a cross prism.

*With regards to applicant's claim 2:*

The cross dichroic prism has higher refractive material which comprises of  $ZrO_2$  and the lower refractive index material comprises of  $Al_2O_3$ .

*With regards to applicant's claim 3:*

The prism base is made of BK7.

*With regards to applicant's claim 7:*

Chu teaches both the lowermost and uppermost layers are made of the lower refractive index material (table 1).

*With regards to applicant's claim 8:*

There are odd numbers of layers.

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu as applied to claim 1-3, 7, and 8 above, and further in view of Ho et al. (US 2002/0008770.)

As described above Chu teaches a cross dichroic prism with high and low refractive index materials, however Chu does not teach using  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$  as the high and low refractive index material respectively. Ho teaches a color separation beam splitter which in paragraph 29 the use of  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$ , such prisms are taught in paragraph 5 and 6 to allow for high-purity and low cost projectors. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to use  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$  in the prism of Chu.

*With regards to applicant's claim 5:*

See Chu, which teaches that the bases are Bk7.

*Allowable Subject Matter*

6. Claims 6 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach the blue film having 23 to 29 layers and the red film having 19 to 25 layers; other combinations are taught as evidence by both Ho and Chu, but the specific combination claimed in claim 6 was not found in the prior art including all the subject matter of claim 1 or combinable with Chu.

The prior art also does not specifically teach the luminous flux from the light source being incident on the entrance surface of the cross dichroic prism at an angle making the luminous flux oblique to an axis of the cross dichroic prism while teaching all the limitations of claim 1.

*Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 5,579,159 to Ito teach in columns 23 and 24 beam splitters that include layers that meet one or the other conditional expressions..

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US 5,400,179 to Ito is similar to the '159 patent to Ito.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS

  
JUDY NGUYEN  
PRIMARY EXAMINER